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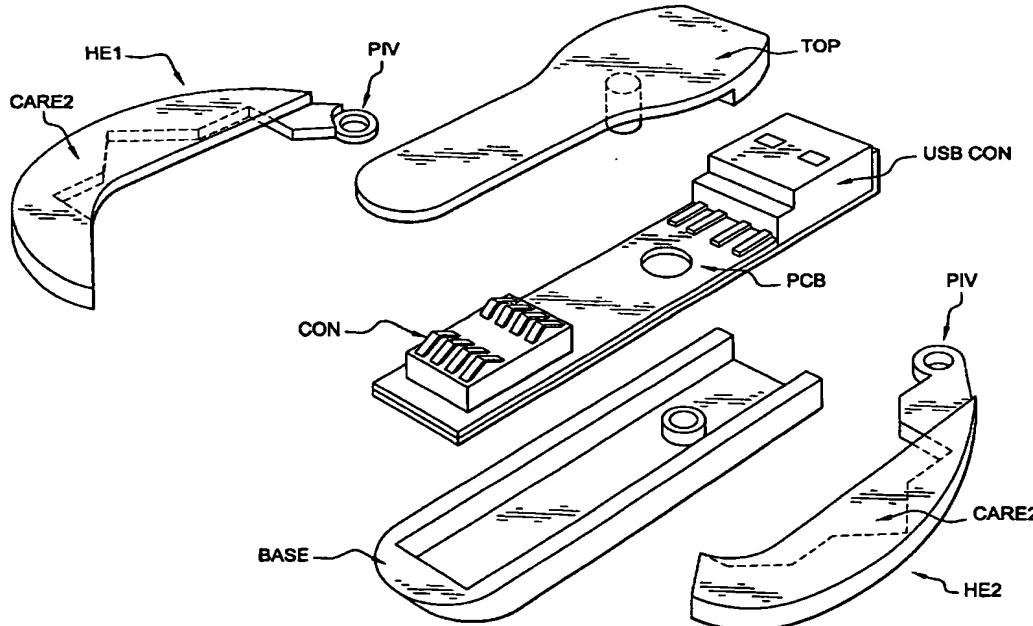
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(54) Title: PORTABLE READER



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(57) Abstract: A portable reader is arranged to read a card. The card is provided with a set of contact areas. The reader is provided with a connector (con). The connector is provided with a set of contact pads. The portable reader comprises a first and a second holding element (HE1, HE2) arranged to hold the card so that at least one contact pad of the set of contact pads can be connected to at least one contact area of the set of contact areas. At least one holding element is movable.



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Portable reader

Field of the invention

The invention concerns a portable reader, in particular a portable reader

5 arranged to read cards. The card can be, for example, a Subscriber Identity Module (SIM) card or an ISO card the format of which respect that specified in the ISO 7816 standard. More generally the card can be any portable object provided with an integrated circuit.

10 Background of the invention

EP1181663 A1 discloses a portable reader. The reader comprises a part for electric connection to the port of a computer, whereby said part exhibits four conduction lines in addition to a part for the insertion of a module which is removable and which can store confidential information, comprising the body of a plastic

15 module which is substantially parallelepiped and rectangular whereby the dimensions thereof are 25 mm long, 15 mm wide and 0.76 mm thick, further comprising an integrated circuit chip provided with contact pads which are electrically connected to contact pads which are flush with one of the surfaces of said module, whereby the insertion part comprises a connector which has pins
20 which are electrically connected to the electric connection lines of the reader and, when the module is inserted into said reader, to the contact pads of said module. The portable reader is specifically designed for readers, which are to be connected electrically to a USB port in a computer.

25 Summary of the invention

An object of the invention is to propose another solution.

According to one aspect of the invention a portable reader arranged to read a card, the card being provided with a set of contact areas, the reader being

provided with a connector, the connector being provided with a set of contact pads, wherein the portable reader comprises a first and a second holding element arranged to hold the card so that at least one contact pad of the set of contact pads can be connected to at least one contact area of the set of contact areas, and

5 wherein at least one holding element is movable.

With the portable reader of the prior art, when the contact areas of the card are connected to the contact pads of the connector, the card is maintained by means of the insertion part. With the invention, when the contact areas of the card to be read are positioned on the connector, the card is maintained using the first and

10 second holding elements.

Brief Description of the Drawings

Figure 1 is an exploded view of a portable reader;

Figure 2 illustrates the various elements of the portable reader;

15 Figure 3 illustrates a portable reader in two different embodiments;

Figure 4 illustrates a portable reader in two different embodiments;

Figure 5 illustrates a portable reader in two different embodiments.

Detailed description

20 Figure 1 shows an exploded view of a portable reader arranged to read cards, in particular smart cards.

Smart cards are standardized articles described in particular in ISO standard 7816. Smart cards are generally provided with an integrated circuit. The integrated circuit may comprise various functional elements, such as in particular a central processor unit (CPU) and volatile memory (RAM), non-volatile memory (ROM) and electrically erasable and programmable non-volatile memory (EEPROM). The central unit (CPU) manages data and addresses in the various memories by means of a bus. In general, data and addresses are respectively encoded on 8 bits and on 16 bits. The integrated circuits are

provided with six contact pads. These pads are identified by the initials VCC, GND, VPP, RST, CLK, and I/O. They serve respectively to supply the integrated circuit with electricity, to ground it, to supply it with a programming voltage, to reset it, to input a clock signal, and to perform data input and output. These 5 pads are electrically connected to contact areas that are flush with the surface of the card. The VCC pad is connected to an area C1, the GND pad to an area C5, the VPP pad to an area C6, the RST pad to an area C2, the CLK pad to an area C3, and the I/O pad to an area C7. Part 2 of above-specified ISO standard 7816 relates to the number, size, and positioning of the electric contact areas on the 10 card. Thus, as defined in that standard, in addition to the areas C1, C5, C6, C2, C3, and C7, the card also has two areas C4 and C8 that are reserved for future use.

The card reader comprises a base element (BASE) on which is fixed a pcb element (PCB). A first holding element (HE1) and a second holding element 15 (HE2) are fixed to the pcb element (PCB). A top element (TOP) covers the pcb element (PCB).

The base element (BASE) and the top element (TOP) are made, for example, in a plastic material. The pcb element (PCB) comprises a support layer onto which is fixed a connector (CON) provided with 8 contact pads. The pcb element (PCB) 20 further comprises a Universal Serial Bus (USB) plug that can be inserted in a USB port of a computer. The USB plug is provided with four conducting lines VCC, GND, D+, D-. These four conducting lines are electrically connected to the connector.

The first holding element (HE1) and the second holding element (HE2) are 25 arranged to pivot using, for example, a pivot element (PIV). The first and second holding elements are provided with a first and a second card-receiving element (CARE1, CARE2). The first and second card-receiving elements are arranged in such a manner that when a card is inserted in the reader, the contact areas of the cards are connected to those of the connector and that the conducting lines VCC,

GND, D+, D- are respectively electrically connected to the contact areas C1, C2, C4 et C8 of the card.

Advantageously, as illustrated in figure 2, the first and second card-receiving elements (CARE1, CARE2) are arranged to receive cards having various formats,

5 for example, both a SIM card and an ISO card. The first and second card-receiving elements (CARE1, CARE2) can be manufactured using, for example, molding techniques.

Figure 3 illustrates a first holding element in a closed position and a second holding element in an open position. The first and second holding elements can

10 be provided with clipping elements (CLIP) so that they can be clipped to each other when they both are in a closed position.

The above-mentioned description illustrates a portable reader arranged to read a card. The card is provided with a set of contact areas. The reader is provided

15 with a connector. The connector is provided with a set of contact pads. The portable reader comprises a first and a second holding element arranged to hold the card so that at least one contact pad of the set of contact pads can be connected to at least one contact area of the set of contact areas. At least one holding element is movable.

20

According to another aspect of the invention, the first and the second holding element (HE1, HE2) are respectively provided with a first and a second card-receiving elements (CARE1, CARE2).

According to another aspect of the invention, the first and the second card-receiving elements (CARE1, CARE2) are arranged to receive cards having various format.

According to another aspect of the invention, the first and the second card-receiving elements (HE1, HE2) are arranged to receive both a SIM card and an ISO card.

According to another aspect of the invention, the first and the second holding elements (HE1, HE2) are arranged to pivot.

According to another aspect of the invention, the portable reader further comprises a USB connector (USB CON).

- 5 According to another aspect of the invention, the USB connector is arranged to pivot. Thus, when connecting the portable reader to a USB computer port, the portable reader can be placed either in a substantially vertical position, or in a substantially horizontal position.
- 10 In the above-mentioned description, for example, as illustrated in figure 3, the pivot element (PIV) is placed near the USB connector. Alternatively, as shown in figure 4, the pivot element (PIV) can be placed at the other extremity of the pcb support.
- 15 In the above-mentioned description, the first and second holding elements (HE1, HE2) were fixed to one pivot element (PIV). Alternatively, as illustrated in figure 5, each holding element can be fixed to a separate pivot (PIV1, PIV2).
- 20 In the above-mentioned description, a USB connector is used. More generally any other type of connector could be used like, for example, a PCMCIA or serial port. Having a USB connector is not essential to the invention.

Claims

1. A portable reader arranged to read a card, the card being provided with a set of contact areas, the reader being provided with a connector, the connector being provided with a set of contact pads, wherein the portable reader comprises a first and a second holding element arranged to hold the card so that at least one contact pad of the set of contact pads can be connected to at least one contact area of the set of contact areas, and wherein at least one holding element is movable.
5. 2. The portable reader according to claim 1, wherein the first and the second holding element are respectively provided with a first and a second card-receiving element.
10. 3. The portable reader according to claim 1, wherein the first and the second card-receiving element are arranged to receive cards having various formats.
15. 4. The portable reader according to claim 3, wherein the first and the second card-receiving element are arranged to receive both a SIM card and an ISO card.
20. 5. The portable reader according to claim 1, wherein the first and the second holding elements are arranged to pivot.
6. The portable reader according to claim 1, wherein the portable reader further comprises a USB connector.
7. The portable reader according to claim 6, wherein the USB connector is arranged to pivot.

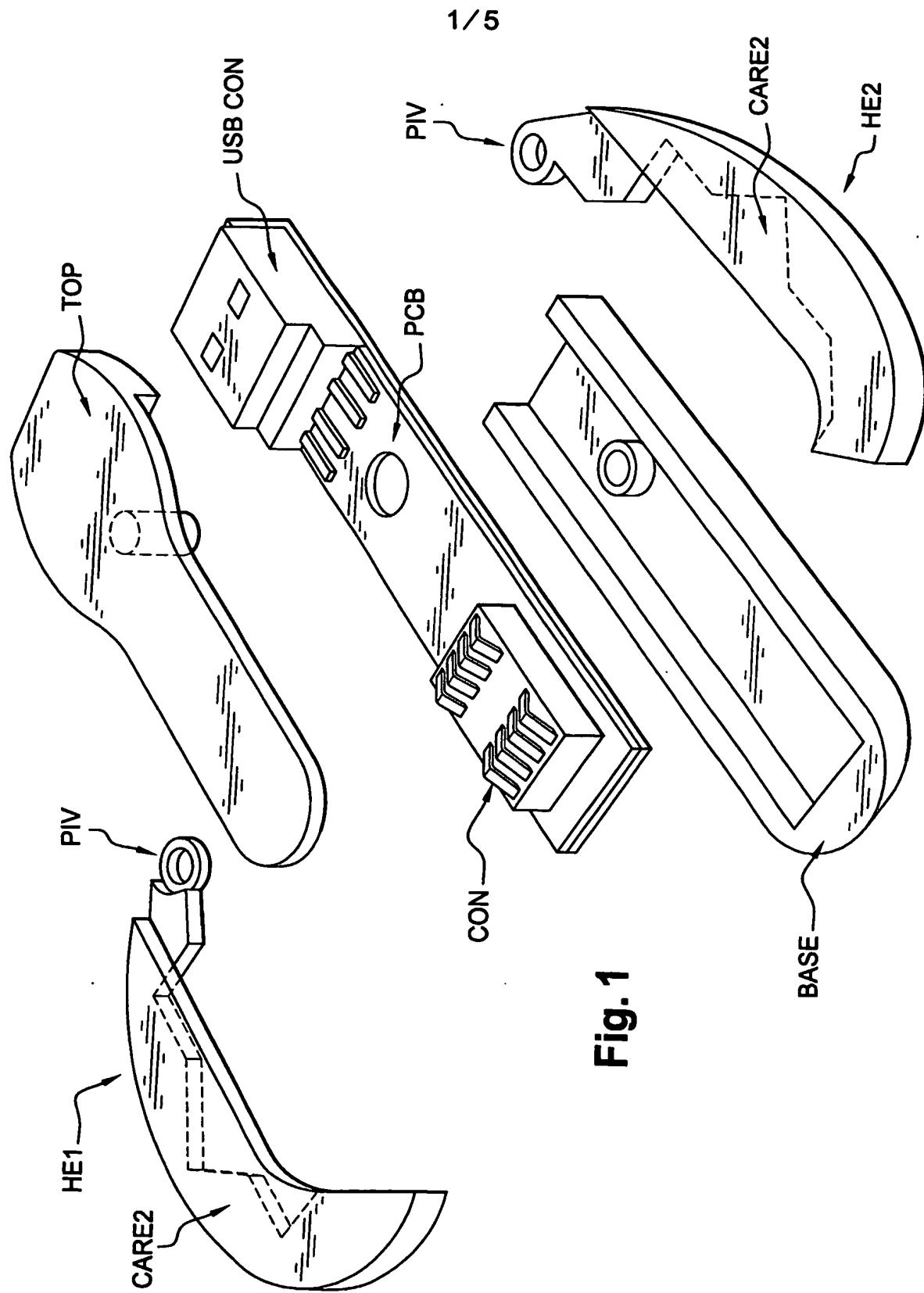
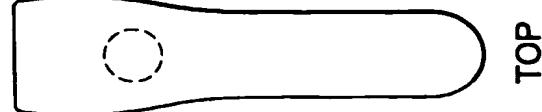
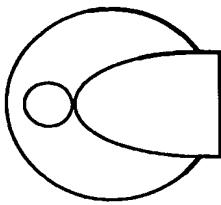
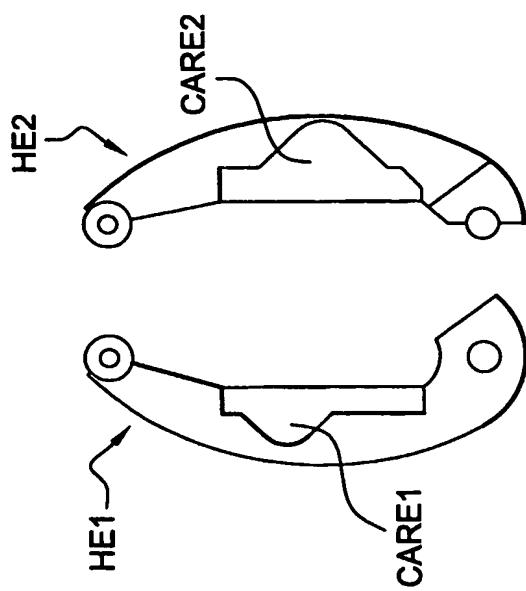
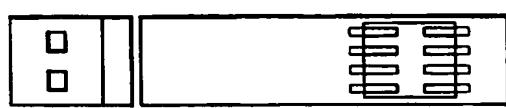
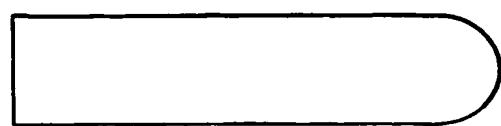


Fig. 1

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**Fig. 2d****Fig. 2e****Fig. 2c****Fig. 2b****Fig. 2a**

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Fig. 3b

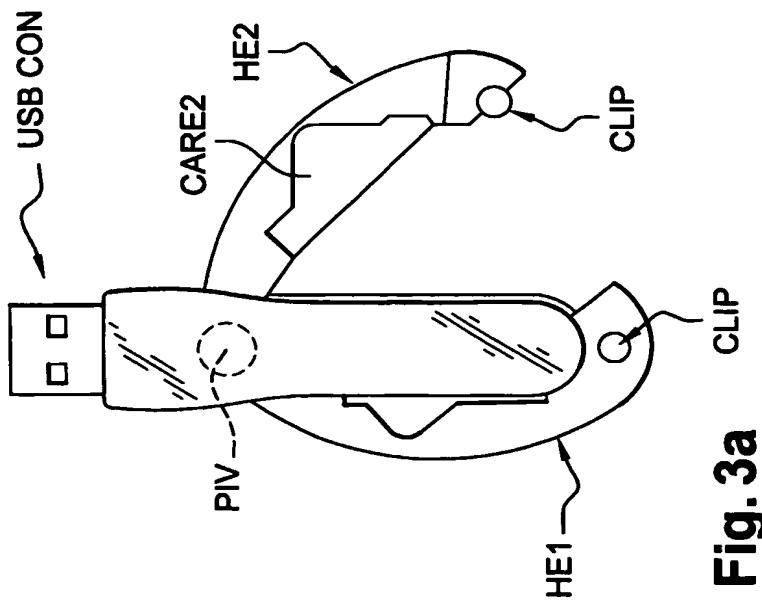
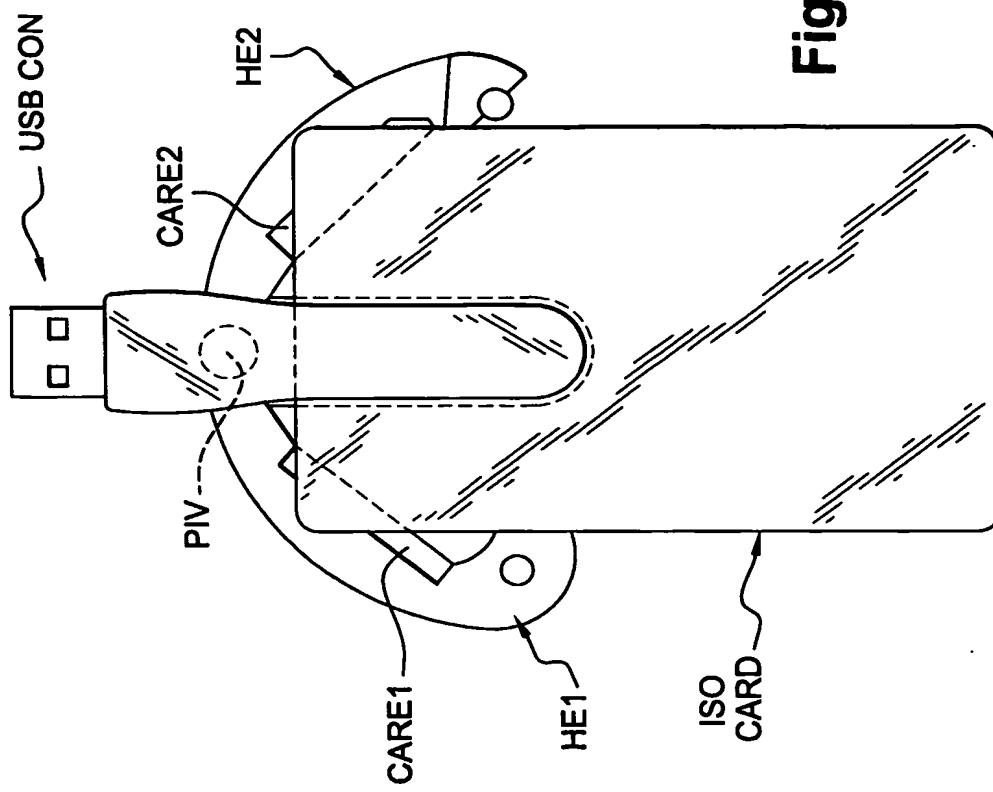


Fig. 3a

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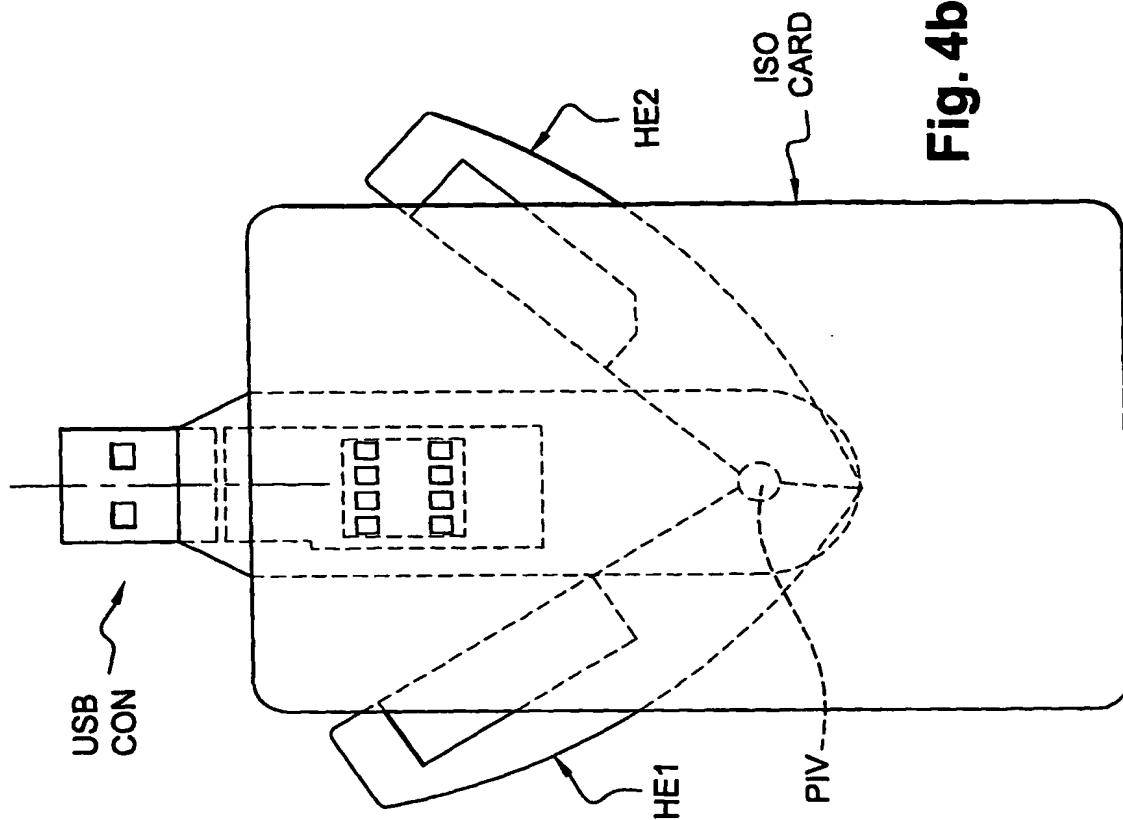


Fig. 4b

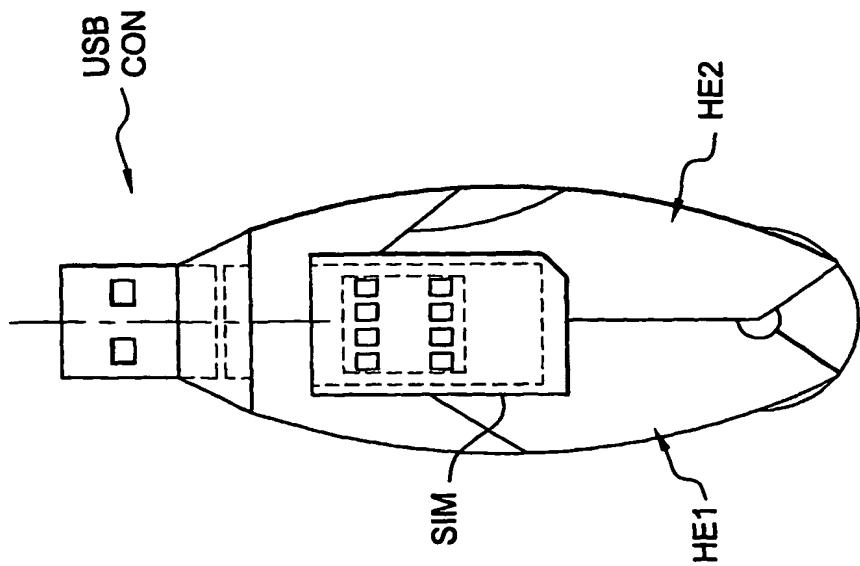
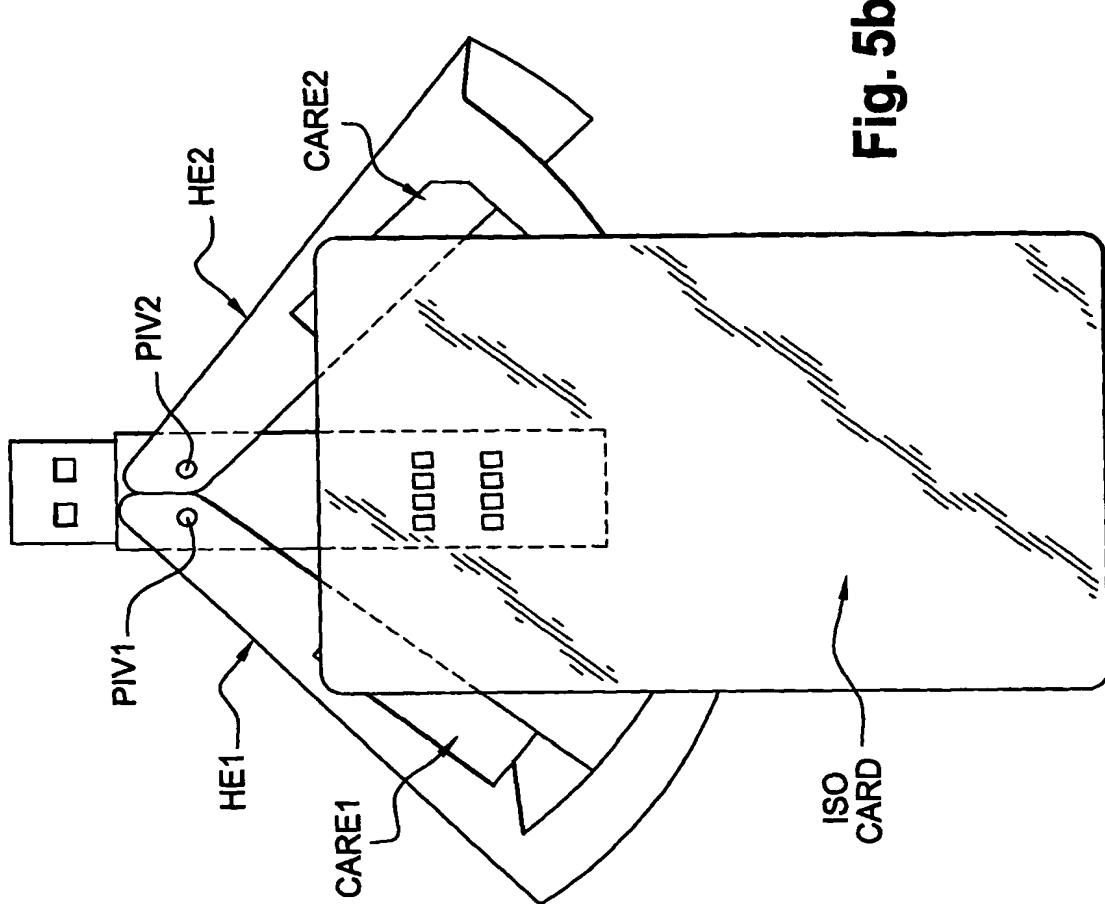
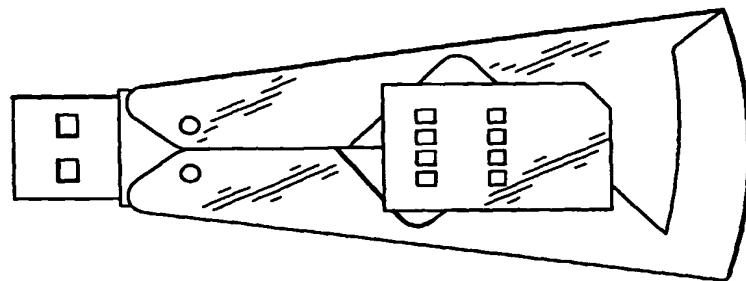


Fig. 4a

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**Fig. 5b****Fig. 5a**

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06K7/00 H01R13/02 H05K5/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 210 193 B1 (OSHITANI AKIYOSHI ET AL) 3 April 2001 (2001-04-03) the whole document	1,2,5
Y	---	6
X	US 6 015 092 A (POSTLEWAITE WILLIAM M ET AL) 18 January 2000 (2000-01-18) column 4, line 31 - line 39; figures 10,11	1
Y	FR 2 793 575 A (SCHLUMBERGER SYSTEMS & SERVICE) 17 November 2000 (2000-11-17) abstract; claim 3	6

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Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date		Patent family member(s)		Publication date
US 6210193	B1	03-04-2001	JP CN EP SG	11297415 A 1231556 A 0947944 A2 95594 A1	29-10-1999 13-10-1999 06-10-1999 23-04-2003
US 6015092	A	18-01-2000	NONE		
FR 2793575	A	17-11-2000	FR AT CN DE DE DK EP WO	2793575 A1 234486 T 1357130 T 60001650 D1 60001650 T2 1181663 T3 1181663 A1 0070533 A1	17-11-2000 15-03-2003 03-07-2002 17-04-2003 18-12-2003 14-07-2003 27-02-2002 23-11-2000

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